



American Diabetes Association Presents

Managing Diabetes and Its Comorbidities:

A Review of the ADA 2004 Clinical Practice Recommendations

This live teleconference/webcast is developed for internists, family physicians, endocrinologists, diabetologists, nurses, nurse practitioners, physician assistants and anyone who treats patients with diabetes.

Participant Syllabus

Tuesday, June 15, 2004

12:00 – 1:00 PM and 8:00 – 9:00 PM Eastern

TO PARTICIPATE

PLEASE DIAL **1-800-556-3831** USE PASSCODE **00385**

OR VISIT

www.meetingcast.com/ADA2004

This activity is supported through an educational grant from

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Key Facts

WHAT: This live teleconference/webcast series is designed to address the challenges of diabetes and its comorbidities. Cardiovascular disease is a major complication and the leading cause of death in people with diabetes. Contributing to the increased cardiovascular risk, risk factors including high blood pressure and dyslipidemia often accompany type 2 diabetes. To improve patient outcomes in this area, it is imperative the health care community remain knowledgeable about diabetic cardiovascular disease and effective clinical management approaches. This series features slide presentations followed by an interactive session allowing you to ask questions and receive immediate feedback. These discussions will be archived on the Internet and available as a CD-ROM following the live broadcasts.

WHO: This activity will be of interest to medical professionals, especially:

- Internists
- Family physicians
- Endocrinologists
- Diabetologists
- Physician assistants
- Nurse practitioners
- Nurses

WHERE: This activity will be presented on the Internet and on the telephone:

Live Toll Free: 1-800-556-3831 code 00385

If you wish to participate in the activity through the Internet, please log on to www.meetingcast.com/ADA2004

WHEN: The activity will be held live:

Tuesday, June 15, 2004	12:00 – 1:00 PM Eastern
Tuesday, June 15, 2004	8:000 – 9:00 PM Eastern

Learning Objectives

At the end of this activity, the participant will be able to:

- Summarize the American Diabetes Association's Standards of Medical Care for Patients with Diabetes;
- State the American Diabetes Association's key clinical goals;
- Discuss strategies for reducing macro- and microvascular complications in patients with diabetes.

Agenda (Subject to Change)

- I. Welcome and Introduction
- II. Slide Presentation – A Review of the ADA 2004 Clinical Practice Recommendations – Vivian A. Fonseca, MD
- III. Live Question and Answer with Faculty – Vivian A. Fonseca, MD
Moderator: George L. Bakris, MD 12:00 – 1:00 PM

Faculty

Presenter



Vivian A. Fonseca, MD

Professor of Medicine
Tullis-Tulane Chair in Diabetes
Tulane University Health Sciences
Center
New Orleans, Louisiana

Vivian Fonseca, MD, MRCP is Professor of Medicine and Pharmacology and Tullis-Tulane Chair in Diabetes at the Tulane University Health Sciences Center. He is also Medical Director of the Tulane Hospital Diabetes Education Program, an ADA recognized diabetes patient education program. Currently, Dr. Fonseca serves on the American Diabetes Association's Professional Practice Committee and *Make the Link! Diabetes, Heart Disease and Stroke* Advisory Committee. He is a frequent lecturer on diabetes and hypertension and serves as an ad hoc reviewer for a number of scientific publications. He is involved in several research projects including the detection of ischemia in asymptomatic patients with diabetes and insulin pump treatment for type 2 diabetes.

Faculty

Moderator



George L. Bakris, MD

Vice Chairman, Department of
Preventive Medicine
Rush-Presbyterian-St. Luke's Medical
Center
Professor of Preventive Medicine and
Internal Medicine
Rush Medical College
Chicago, Illinois

George L. Bakris, MD is a Professor of Preventive and Internal Medicine and currently Vice-Chairman of the Department of Preventive Medicine and Director of the Hypertension Training Program at Rush Medical College in Chicago. He is a board-certified nephrologist who served as Director of Renal Research at the Ochsner Clinic in New Orleans, Louisiana for three years. He currently serves as a consultant to the Cardio-Renal section of the FDA. He also serves on 10 different editorial boards of nephrology and hypertension journals including *Hypertension*, *Journal of Nephrology* and *The American Journal of Nephrology*. He has authored more than 180 articles and abstracts as well as numerous book chapters, primarily in the areas of diabetic nephropathy and hypertensive renal disease. He was also a member of the writing committee of the JNC VI.

Disclosure Statement

As a provider of continuing education credits (accredited by the Accreditation Council for Continuing Medical Education, Virginia Nurses Association, and Accreditation Council for Pharmacy Education) the American Diabetes Association must ensure balance, independence, objectivity, and scientific rigor in all its educational activities. All faculty participating in a sponsored activity are expected to disclose to the activity audience any significant financial interest or other relationship (1) with the manufacturer(s) of any commercial product(s) and/or provider(s) of commercial services discussed in an educational presentation and (2) with any commercial supporters of the activity. (Significant financial interest or other relationship can include such things as grants or research support, employee, consultant, major stockholder, member of speakers bureau, etc.) The intent of this disclosure is not to prevent a speaker with a significant financial or other relationship from making a presentation, but rather to provide listeners with information on which they can make their own judgments. It remains for the audience to determine whether the speaker's interests or relationships may influence the presentation with regard to exposition or conclusion.

Disclosures

Vivian A. Fonseca, MD

Grant /Research Support and Scientific Advisory Panel for: GlaxoSmithKline, Pfizer Inc., Eli Lilly & Co., Aventis Pharmaceuticals, and Takeda Pharmaceuticals

George L. Bakris, MD

Grant/Research Support, Consultant, Speaker's Bureau and Advisory Board for: AstraZeneca, Merck, Novartis, Boehringer Ingelheim, Sankyo, and Reliant

Accreditation

PHYSICIANS:

The American Diabetes Association is accredited by the accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

The American Diabetes Association designates this continuing medical education activity for a maximum of 1.0 hours in Category 1 credit towards the American Medical Association's Physician's Recognition Award. Each physician should claim only those hours of credit that he/she has spent in the educational activity.

This activity has been reviewed and is acceptable for up to 1.00 prescribed credits by the American Academy of Family Physicians.

NURSES:

The American Diabetes Association is approved as a provider of continuing education in nursing by the Virginia Nurses Association (VNA) which is accredited as an approver of continuing education in nursing by the American Nurse's Credentialing Center's Commission on Accreditation. The American Diabetes Association is located at 1701 North Beauregard Street, Alexandria, VA 22311. VNA-CEA Provider Number: 04-03-02.

This educational activity is approved by the Virginia Nurses Association (VNA) which is accredited by the American Nurses Credentialing Center's Commission on Accreditation as an approver of Continuing Education in Nursing for a maximum of 1.2 VNA Contact Hours. The VNA is located at 7113 Three Chopt Road, Suite 204, Richmond, VA 23226.

The American Diabetes Association is also a provider approved by the California Board of Registered Nursing, Provider No. CEP-12196, for 1.0 contact hours.

NURSE PRACTITIONERS:

This activity has been approved for 1.2 contact hours of continuing education by the American Academy of Nurse Practitioners. Program ID 0404196

PHYSICIAN ASSISTANTS:



This activity has been reviewed and is approved for a maximum of one hour of clinical Category 1 (Preapproved) CME credit by the American Academy of Physician Assistants. Physician assistants should claim only those hours actually spent participating in the CME activity.

This activity was planned in accordance with AAPA's CME Standards for Live Programs and for Commercial Support of Live Programs.

ADA Clinical Practice Recommendations

The American Diabetes Association recommends a comprehensive approach to the management of diabetes that includes aggressive control of blood glucose as well as other cardiovascular risk factors. Full text of the Association's Clinical Practice Recommendations is available online at www.diabetes.org/cpr. Below is a summary of key clinical goals:

Key Clinical Goals	
Glycemic control	
A1C	< 7%
Preprandial plasma glucose	90-130 mg/dl
Peak postprandial plasma glucose	< 180 mg/dl
Blood pressure	< 130/80 mmHg
Lipids	
LDL	< 100 mg/dl
Triglycerides	< 150 mg/dl
HDL	> 40 mg/dl

Additional Resources for Health Professionals and Patients With Diabetes

American Diabetes Association

www.diabetes.org

- American Diabetes Association Clinical Practice Recommendations
- Patient information
- Local programs

www.diabetes.org/recognition/education

- List of nationwide ADA Recognized Patient Education Programs

www.diabetes.org/MaketheLink

- Diabetes Cardiovascular Disease Toolkit, a kit of reproducible patient education tools
- Interactive learning tools

1-800-DIABETES (342-2383)

- Patient information
- Local programs

How to Ask Questions During the Program

Questions by E-Mail

If you are participating online, you may submit your questions via e-mail. Type your question in the question box that appears on the website and send it at any time during the broadcast.

Questions by Phone

If you are participating by telephone, you may press * **0** on your telephone keypad. The operator will connect you with a live question screener. The screener will listen to your question, take your name, and then ask you to wait while they let the moderator know there is a question. (During this brief wait, you will be able to hear the continuing discussion). The moderator will then cue you to ask your question.

SPEAKER'S SLIDES

Slide 1

**Standards of Medical Care in
Diabetes**

**American Diabetes Association
Clinical Practice Recommendations
2004**

Vivian A. Fonseca, MD, MRCP

Slide 2

Learner Objectives

- **Summarize the ADA's Standards of Care for patients with diabetes**
- **State the ADA's key clinical goals**
- **Discuss strategies for reducing macro- and microvascular complications in patients with diabetes**

ADA Clinical Practice Recommendations

**Diabetes Care
Volume 27 Supplement 1
January 2004**

**full text available online at
www.diabetes.org**

Classification

- **Type 1: beta cell destruction, absolute insulin deficiency**
- **Type 2: progressive insulin secretory defect; insulin resistance**
- **Gestational Diabetes Mellitus**
- **Other: genetics, diseases of the pancreas**

Criteria for Diagnosis

- Symptoms of diabetes and a casual plasma glucose ≥ 200 mg/dl
or
- Fasting plasma glucose ≥ 126 mg/dl
or
- 2-hr postload glucose ≥ 200 mg/dl during an OGTT

Confirm with repeat testing on a different day

Use of A1C for the diagnosis of diabetes is not recommended at this time

Testing for Diabetes

- Consider in all individuals age 45 years and above, particularly those with a BMI ≥ 25 kg/m²
- If normal, repeat testing at 3 year intervals
- Consider at a younger age or more frequently in individuals who are overweight and have additional risk factors

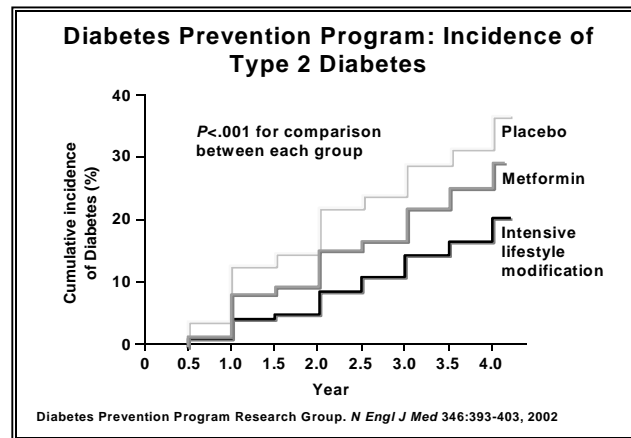
Slide 7

Pre-Diabetes		
<u>Test</u>	<u>FPG or 2-hr PG</u>	<u>Diagnosis</u>
FPG	100-125 mg/dl	IFG
OGTT	140-199 mg/dl	IGT

Slide 8

Pre-Diabetes	
Diabetes Prevention	
<ul style="list-style-type: none">▪ Losing 5-10% of total body weight and exercising 30 minutes/day 5 days/week can reduce progression to diabetes by 58% (DPP)▪ Lifestyle interventions in DPP delayed the onset of diabetes approx 3 years▪ Drug therapy has not been shown to be as safe or effective as lifestyle interventions in preventing diabetes	

Slide 9



Slide 10

Diabetes Management	
Glycemic Control	
A1C	<7.0%
Preprandial plasma glucose	90-130 mg/dl
Postprandial plasma glucose	<180 mg/dl
Blood Pressure	
	<130/80 mmHg
Lipids	
LDL	<100 mg/dl
Triglycerides	<150 mg/dl
HDL	>40 mg/dl

Key Concepts in Setting Glycemic Goals

- Should be individualized
- Certain populations require special considerations
- Less intensive goals may be indicated in patients with severe or frequent hypoglycemia
- More stringent goals may further reduce complications at the cost of increased risk of hypoglycemia
- Postprandial glucose may be targeted if A1C goals are not met despite reaching preprandial glucose goals

Assessment of Glycemic Control

- **SMBG**
 - integral component of diabetes therapy
 - include in management plan
 - instruct patient in SMBG and evaluate their techniques and ability to use data
- **A1C**
 - perform test every 6 months if goals being attained and treatment regimen stable
 - every 3 months if goals not attained or treatment regimen being changed

Primary Goals of Medical Nutrition Therapy

- Attain and maintain recommended metabolic outcomes:
 - glucose, LDL, HDL, triglycerides, BP, body weight
- Modify nutrient intake and lifestyle to prevent and treat the chronic complications and comorbidities of diabetes
- Improve health through healthy food choices and physical activity
- Address individual nutritional needs, cultural preferences, and lifestyle

Distribution of Calories

- 10% – 20% from protein
- < 10% from saturated fat
- ≤ 10% from polyunsaturated fat
- 60% - 70% of calories from monounsaturated fat and carbohydrate
- < 300 mg cholesterol per day

Physical Activity

A regular physical activity program, adapted to the presence of complications, is recommended for all patients with diabetes who are capable of participating.

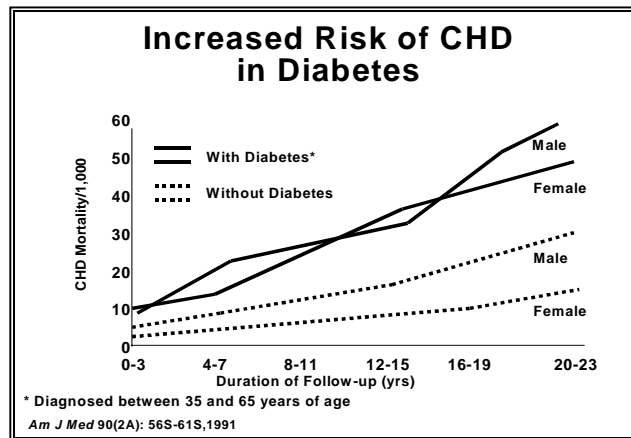
Physical Activity

- Important for overall general health and well-being
- Essential part of the diabetes regimen
 - Enhances insulin sensitivity
 - Augments weight-reduction efforts
- Reduces macrovascular disease risk
- Aerobic exercise is preferred
- Accumulate 30 minutes of moderate activity on most days of the week

Exercise Guidelines

- Medical evaluation for CAD, PVD, and neuropathy
- Choose activity patient enjoys
- Educate on hypoglycemia
- Proper foot care and footwear
- Blood glucose monitoring - pre and post
- Insulin or carbohydrate adjustments when necessary
- Medical ID

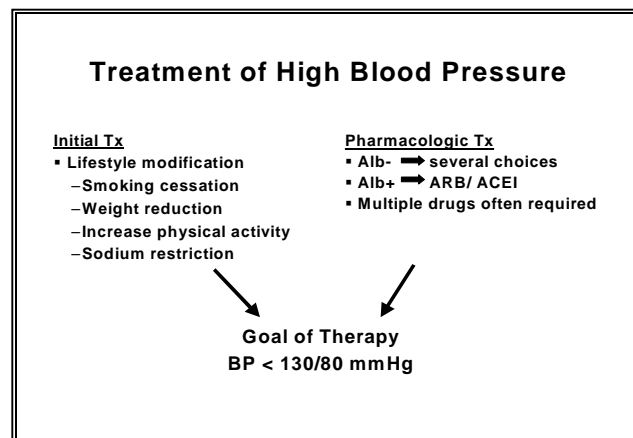
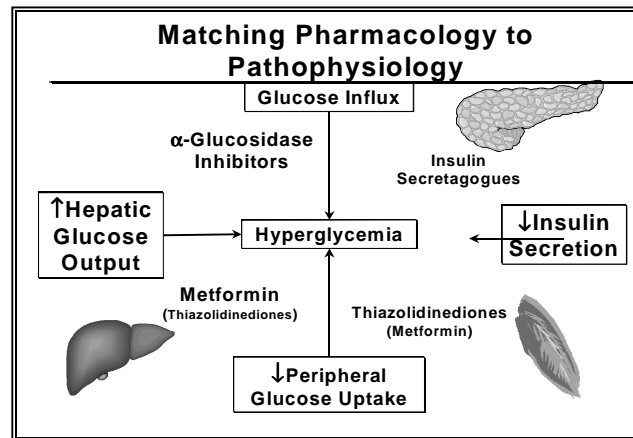
Prevention and Management of Diabetes Complications



Metabolic Syndrome- NCEP ATP III

- Abdominal Obesity - Waist > 40 in men, > 35 in women
- Triglycerides > 150
- HDL < 40 - men; < 50 - women
- BP > 130/85
- Fasting Glucose >110
- Any 3 of the above- CPT 277.7

JAMA 285:2486-2497, 2001



Treatment of High Blood Pressure

- If systolic between 130-139 or diastolic between 80-89
 - lifestyle and behavior therapy for a maximum of 3 months
 - start medications if target not reached
- If systolic ≥ 140 or diastolic ≥ 90
 - medications in addition to lifestyle intervention

Treatment of High Blood Pressure

- Agents shown to be beneficial in controlled trials:
 - Angiotensin II receptor blockers and ACE inhibitors
 - Thiazide diuretics in low doses
 - Beta-blockers in CAD
 - Calcium channel blockers

Treatment of High Blood Pressure

- In presence of microalbuminuria:
 - Type 1 with or without HTN – ACEI shown to delay progression of nephropathy
 - Type 2 with HTN- ACEI and ARB shown to delay progression to macroalbuminuria
- Type 2 with HTN and macroalbuminuria and renal insufficiency
 - ARB shown to delay progression of nephropathy
- If one class is not tolerated, another can be substituted

Dyslipidemia in Diabetes

Increased

- Triglycerides
- VLDL
- LDL and Small Dense LDL
- Apo B

Decreased

- HDL
- Apo A-I

Lipid Management

- Improve glucose control
- Weight loss if overweight
- Daily exercise
- Smoking cessation
- Low saturated fat, low cholesterol diet
- Pharmacologic treatment frequently necessary

Lipid Goals

- LDL cholesterol <100 mg/dl
- HDL cholesterol >40 mg/dl (men)
 > 50 mg/dl (women)
- Triglycerides <150 mg/dl

Initiation of Treatment	
Total CHO \geq 135 mg/dl and $>$ 40 years of age	Statin therapy to achieve an LDL reduction of \sim 30% regardless of baseline levels may be appropriate
LDL \geq 130 mg/dl	Lifestyle interventions and statin therapy
LDL 100-129 mg/dl	Strategies may include more aggressive MNT and statin therapy. A fibric acid derivative or niacin might be used if HDL is $<$ 40 mg/dl.

Effect of Lipid Lowering Drugs			
	LDL-C	TG	HDL-C
Statins	↓↓	↔ ↓	↔ ↑
Fibric acid	↓ ↔ ↑	↓↓	↑
Bile acid resins	↓	↑	↔
Nicotinic acid	↓	↓↓	↑↑

Order of Priorities for Treatment of Diabetic Dyslipidemia in Adults

- I. LDL cholesterol lowering**
 - Lifestyle interventions
 - Preferred: HMG CoA reductase inhibitor (statin)
 - Others: Bile acid binding resin, cholesterol absorption inhibitor, fenofibrate or niacin
- II. HDL cholesterol raising**
 - Lifestyle interventions
 - Nicotinic acid or fibrates

Continued

Order of Priorities for Treatment of Diabetic Dyslipidemia in Adults

- III. Triglyceride lowering**
 - Lifestyle interventions
 - Glycemic control
 - Fibric acid derivative (gemfibrozil, fenofibrate)
 - Niacin
 - High-dose statins (in those who also have high LDL cholesterol)

Continued

Order of Priorities for Treatment of Diabetic Dyslipidemia in Adults

IV. Combined hyperlipidemia

- **First choice: Improved glycemic control plus high dose statin**
- **Second choice: Improved glycemic control plus statin plus fibric acid derivative* (gemfibrozil, fenofibrate)**
- **Third choice: Improved glycemic control plus statin plus nicotinic acid**

The combination of statins with nicotinic acid and especially with gemfibrozil or fenofibrate may carry an increased risk of myositis

Screening for Lipid Disorders

Screening

- **Adults, test annually and more often if needed to achieve goals**
- **If at goal, repeat every two years**

- **Children > 2 years, lipid profile after diagnosis of diabetes and when glucose control established**

Anti-Platelet Agents in Diabetes

- **Primary Prevention**
 - Over 40 years old
 - Family history of CHD
 - Cigarette smoking
 - Hypertension
 - Obesity
 - Albuminuria
 - Dyslipidemia
- **Secondary Prevention**
 - History of myocardial infarction
 - Vascular bypass procedure
 - Stroke or TIA
 - Peripheral vascular disease
 - Claudication, angina
- Enteric-coated aspirin 75-162 mg/day
- Contraindications

Smoking Cessation

Recommendations

- Advise all patients not to smoke
- Include smoking cessation counseling as a routine component of diabetes care

Indications for Screening for CAD in Diabetic Patients

- **Candidates for a diagnostic cardiac stress test:**
 - Typical or atypical cardiac symptoms
 - Abnormal ECG
- **Candidates for a screening cardiac stress test:**
 - History of peripheral or carotid occlusive disease
 - Sedentary lifestyle, age ≥ 35 years, and plans to begin a vigorous exercise program
 - Two or more risk factors
 - dyslipidemia
 - hypertension
 - Smoking
 - Family history of premature CAD
 - Presence of micro/macroalbuminuria

Nephropathy

- **Occurs in 20-40% of patients with diabetes**
- **Single leading cause of end stage renal disease**
- **Persistent albuminuria is earliest stage of diabetic nephropathy**
- **Microalbuminuria a marker of increased CVD risk**

Nephropathy Screening

- Perform annual test for microalbuminuria:
 - Type 2: start at diagnosis
 - Type 1: start at 5 years after diagnosis
- Screening can be performed by three methods:
 - Albumin-to-creatinine ratio in a random spot collection (preferred method)
 - 24-hour urine collection
 - Timed
- If positive for microalbuminuria, repeat within 3 months
- If 2 out of 3 tests are abnormal, begin treatment

Nephropathy Screening

Category	Spot Collection (ug/mg creatinine)
Normal	<30
Microalbuminuria	30-299
Macro (clinical) albuminuria	300

Nephropathy Treatment

Treatment

- Optimize glucose and blood pressure control
- Micro-and macroalbuminuria – ACE inhibitors or ARBs should be used
- In presence of nephropathy, initiate protein restriction
- Monitor serum potassium levels for development of hyperkalemia
- Consider referral to physician experienced in care of diabetic renal disease

Diabetic Retinopathy

- Vascular complication of both type 1 and type 2 diabetes
- Most frequent cause of new cases of blindness among adults
- Nephropathy is associated with retinopathy
- High blood pressure is a risk factor for macular edema and is associated with PDR
- Pregnancy in type 1 patients may aggravate retinopathy

Diabetic Retinopathy Screening

Screening

- Type 1 adults and adolescents, comprehensive eye exam 3-5 years after onset of diabetes
- Type 2 patients, comprehensive eye exam at diagnosis
- Annual examinations for both type 1 and 2
- Women with diabetes planning pregnancy should have an initial exam and follow-up throughout pregnancy

Diabetic Retinopathy Treatment

Recommendations

- Glycemic control reduces risk and progression of retinopathy
- Blood pressure control reduces risk and progression of retinopathy
- Aspirin therapy does not increase risk of hemorrhage

Risk Factors for Ulceration and Amputation

- **Peripheral neuropathy with loss of protective sensation**
 - **Altered biomechanics**
 - **Evidence of increased pressure**
 - **Bony deformity**
 - **Peripheral vascular disease**
 - **History of ulcers or amputation**
 - **Severe nail pathology**
-
-
-

Evaluating the Foot

Annual foot exam to identify high-risk foot conditions should assess:

- **Protective sensation**
 - **Semmes-Weinstein 5.07 monofilament**
 - **Foot structure and biomechanics**
 - **Vascular status**
 - **History of claudication, pedal pulses; consider ABI**
 - **Skin integrity**
-
-
-

Foot Care

- **Educate patient**
 - Daily inspection
 - Proper foot care (nail, skin care)
 - Proper footwear
 - Avoid trauma to the feet
 - Smoking cessation
- **Refer high-risk patients to foot care specialists**

Immunization

- **Influenza and pneumonia are common, preventable infectious diseases associated with high mortality and morbidity in patients with diabetes**
- **Recommendations**
 - Annually provide an influenza vaccine to all diabetic patients 6 months of age or older
 - Provide at least one lifetime pneumococcal vaccine for adults with diabetes

**Preventive Care
Preconception Care**

Goals of Preconception Program

- **Assessment of a woman's fitness for pregnancy**
- **Obstetric evaluation**
- **Intensive education of woman and family**
- **Attainment of optimum diabetes control**
- **Timing and planning of pregnancy**

**Preventive Care
Preconception Care**

Recommendations

- **A1C levels normal in a patient before conception is attempted**
- **All women with childbearing potential should be educated about need for glucose control before pregnancy**
- **Women who are contemplating pregnancy should be evaluated and treated for retinopathy, nephropathy, neuropathy, and CVD**

Special Considerations

Care of Older Adults with Diabetes

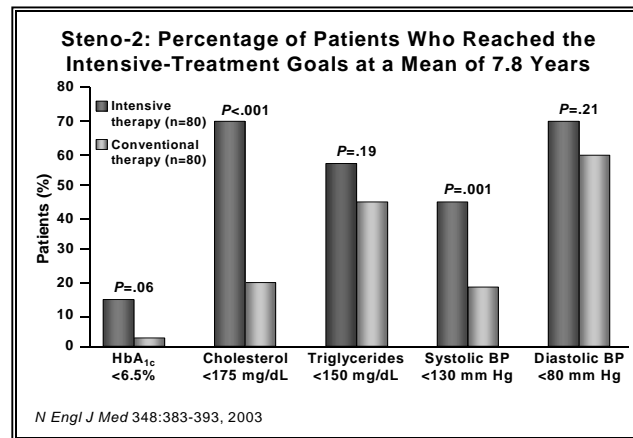
- 20% of patients over 65 years have diabetes
- Older persons with diabetes have higher rates of premature death, functional disability, and coexisting illnesses
- Greater reduction in morbidity and mortality may result from control of cardiovascular risk factors rather than glycemic control

Special Considerations

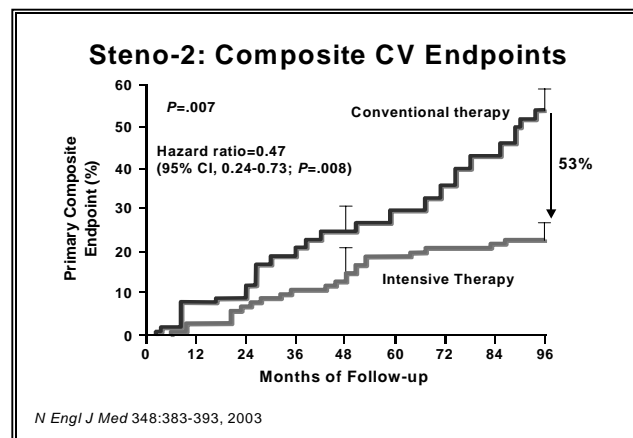
Children and Adolescents

- 3/4s of all newly diagnosed cases of type 1 diabetes occur in individuals younger than 18 years
- Type 2 diabetes is increasingly being diagnosed in children and adolescents
- Diabetes care should be provided by a team that can deal with the special medical, educational, nutritional, and behavioral issues
- At initial diagnosis, establish goals of care and begin self-management education

Slide 53



Slide 54



Conclusion

- Comprehensive approach required to effectively manage diabetes
- Talk to your patients about the ABCs of Diabetes:
 - A : A1C (HbA_{1c})
 - Goal < 7.0 %
 - B: Blood pressure
 - Goal < 130/80 mm Hg
 - Cholesterol (LDL)
 - Goal < 100 mg/dl